

ABSTRACT

A combiner for use in a diversity radio receiver (FM) which receives a plurality of diversity I and Q modulated signals each carrying I and Q information signals through spatially separated antennas, the received I and Q signal pairs being digitized at a sampling rate T and converted to baseband I and Q signals. Each converted I and Q signal pair represents a diversity I and Q vector which is input to the combiner. A discriminator is provided for each sample stream of diversity I and Q vectors input to the combiner. Each discriminator produces, for each sample, an output discriminated I and Q vector (I_{Δ} , Q_{Δ}) having a phase representative of the frequency of the information signal and an amplitude proportional to the power of the information signal. Adders separately add together the discriminated I signals (I_{Δ}) to produce a combined discriminated I signal ($I_{c\Delta}$) and the discriminated Q signals (Q_{Δ}) to produce a combined discriminated Q signal ($Q_{c\Delta}$), whereby the combined discriminated I and Q signals represent a combined discriminated vector ($I_{c\Delta}$, $Q_{c\Delta}$) having a phase determined by one or more of the phases of said diversity I and Q vectors depending upon the relative powers of said diversity I and Q vectors. A phase accumulator adds to an accumulation vector, over successive samples, the phases of the combined discriminated vectors ($I_{c\Delta}$, $Q_{c\Delta}$) to produce an output combined I and Q signal pair (I_c , Q_c).